

Amendments to the Claims:

The following lists all claims and their status:

1-4364. (cancelled)

4365. (currently amended): A mixture produced from ~~a portion of~~ a coal formation, comprising:

a non-condensable component hydrocarbons comprising hydrocarbons having carbon numbers of less than about 5, wherein a weight ratio of the hydrocarbons having carbon ~~number numbers~~ from 2 through 4, ~~to methane, to methane~~ in the mixture is greater than approximately 1;

wherein the non-condensable ~~hydrocarbons further comprise~~ component comprises H₂, wherein greater than about 15 % by weight of the non-condensable ~~hydrocarbons~~ component comprises H₂; and

condensable hydrocarbons, comprising:

oxygenated hydrocarbons, wherein greater than about 1.5 % by weight of the condensable hydrocarbons comprises oxygenated hydrocarbons;

olefins, wherein less than about 10 % by weight of the condensable hydrocarbons comprises olefins; and

aromatic compounds, wherein greater than about 20 % by weight of the condensable hydrocarbons comprises aromatic compounds.

4366. (currently amended): The mixture of claim 4365, wherein the non-condensable ~~hydrocarbons further comprise~~ component comprises ethene and ethane, and wherein a molar ratio of ethene to ethane in the non-condensable ~~hydrocarbons~~ component ranges from about 0.001 to about 0.15.

4367. (currently amended): The mixture of claim 4365, ~~wherein the condensable hydrocarbons further comprise oxygen-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is oxygen.

4368. (currently amended): The mixture of claim 4365, ~~wherein the condensable hydrocarbons further comprise sulfur-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is sulfur.

4369. (currently amended): The mixture of claim 4365, ~~wherein the condensable hydrocarbons further comprise sulfur, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is sulfur.

4370. (currently amended): The mixture of claim 4365, ~~wherein the condensable hydrocarbons further comprise oxygen-containing compounds, wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons comprise oxygen-containing compounds, and~~ wherein the ~~oxygen-containing compounds~~ oxygenated hydrocarbons comprise phenols.

4371. (original): The mixture of claim 4365, wherein the condensable hydrocarbons comprise multi-ring aromatics, and wherein less than about 5 % by weight of the condensable hydrocarbons comprises multi-ring aromatics with more than two rings.

4372. (original): The mixture of claim 4365, wherein the condensable hydrocarbons comprise asphaltenes, and wherein less than about 0.3 % by weight of the condensable hydrocarbons are asphaltenes.

4373. (original): The mixture of claim 4365, wherein the condensable hydrocarbons comprise cycloalkanes, and wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons are cycloalkanes.

4374. (currently amended): The mixture of claim 4365, ~~wherein the non-condensable hydrocarbons further comprise hydrogen, and~~ wherein greater than about 10 % by volume at 25 °C and one atmosphere absolute pressure and less than about 80% by volume at 25 °C and one atmosphere absolute pressure of the non-condensable ~~hydrocarbons~~ component comprises hydrogen H₂.

4375. (original): The mixture of claim 4365, further comprising ammonia, and wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4376. (original): The mixture of claim 4365, further comprising ammonia, and wherein the ammonia is used to produce fertilizer.

4377. (currently amended): The mixture of claim 4365, wherein the condensable hydrocarbons ~~further~~ comprise hydrocarbons having a carbon number of greater than approximately 25, wherein less than about 15 % by weight of the hydrocarbons have a carbon number greater than approximately 25.

4378. (currently amended): The mixture of claim 4365, wherein about 0.1 % to about 5 % by weight of the condensable hydrocarbons ~~comprises~~ comprise olefins.

4379. (currently amended): The mixture of claim 4365, wherein about 0.1 % to about 2 % by weight of the condensable hydrocarbons ~~comprises~~ comprise olefins.

4380. (currently amended): The mixture of claim 4365, wherein greater than about ~~25~~ 5 % by weight of the condensable hydrocarbons ~~comprises~~ comprise oxygenated hydrocarbons.

4381. (original): The mixture of claim 4365, wherein the mixture comprises hydrocarbons having greater than about 2 carbon atoms, and wherein the weight ratio of hydrocarbons having greater than about 2 carbon atoms to methane is greater than about 0.3.

4382. (currently amended): A mixture produced from ~~a portion of~~ a coal formation, comprising:

condensable hydrocarbons, wherein less than about 5 % by weight of the condensable hydrocarbons ~~comprises~~ comprise hydrocarbons having a carbon number greater than about 25;

wherein the condensable hydrocarbons ~~further~~ comprise:

oxygenated hydrocarbons, wherein greater than about 5 % by weight of the condensable hydrocarbons ~~comprises~~ oxygenated hydrocarbons;

olefins, wherein less than about 10 % by weight of the condensable hydrocarbons ~~comprises~~ olefins; and

aromatic compounds, wherein greater than about 30 % by weight of the condensable hydrocarbons ~~comprises~~ aromatic compounds; and

a non-condensable hydrocarbons component comprising H_2 , wherein greater than about 15 % by weight of the non-condensable ~~hydrocarbons component~~ comprises H_2 .

4383. (currently amended): The mixture of claim 4382, wherein the non-condensable ~~hydrocarbons further comprises~~ component comprises hydrocarbons having carbon numbers of less than 5, and wherein a weight ratio of hydrocarbons having carbon numbers from 2 through 4 ~~to methane, to methane,~~ is greater than approximately 1.

4384. (currently amended): The mixture of claim 4382, wherein the non-condensable ~~hydrocarbons comprise~~ component comprises ethene and ethane, and wherein a molar ratio of ethene to ethane in the non-condensable ~~hydrocarbons component~~ ranges from about 0.001 to about 0.15.

4385. (currently amended): The mixture of claim 4382, wherein the condensable hydrocarbons ~~further~~ comprise nitrogen containing compounds, and wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is nitrogen.

4386. (currently amended): The mixture of claim 4382, ~~wherein the condensable hydrocarbons further comprise oxygen-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is oxygen.

4387. (currently amended): The mixture of claim 4382, ~~wherein the condensable hydrocarbons further comprise sulfur-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable hydrocarbons is sulfur.

4388. (currently amended): The mixture of claim 4382, ~~wherein the condensable hydrocarbons further comprise oxygen-containing compounds, wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons comprise oxygen-containing compounds, and~~ wherein the ~~oxygen-containing compounds~~ oxygenated hydrocarbons comprise phenols.

4389. (currently amended): The mixture of claim 4382, ~~wherein the condensable hydrocarbons further comprise multi-ring aromatics, and~~ wherein less than about 5 % by weight of the condensable hydrocarbons ~~comprises~~ comprise multi-ring aromatics with more than two rings.

4390. (currently amended): The mixture of claim 4382, ~~wherein the condensable hydrocarbons further comprise asphaltenes, and~~ wherein less than about 0.3 % by weight of the condensable hydrocarbons ~~are~~ comprise asphaltenes.

4391. (currently amended): The mixture of claim 4382, ~~wherein the condensable hydrocarbons comprise cycloalkanes, and~~ wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons ~~are~~ comprise cycloalkanes.

4392. (currently amended): The mixture of claim 4382, wherein greater than about 10 % by volume and less than about 80 % by volume at 25 °C and one atmosphere absolute pressure of the non-condensable ~~hydrocarbons~~ component is ~~hydrogen~~ H₂.

4393. (original): The mixture of claim 4382, further comprising ammonia, and wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4394. (original): The mixture of claim 4382, further comprising ammonia, and wherein the ammonia is used to produce fertilizer.

4395. (currently amended): The mixture of claim 4382, wherein about 0.1 % to about 5 % by weight of the condensable hydrocarbons ~~comprises~~ comprise olefins.

4396. (currently amended): The mixture of claim 4382, wherein about 0.1 % to about 2 % by weight of the condensable hydrocarbons ~~comprises~~ comprise olefins.

4397. (currently amended): The mixture of claim 4382, ~~wherein the condensable hydrocarbons comprises oxygenated hydrocarbons, and~~ wherein greater than about 15 % by weight of the condensable hydrocarbons comprises oxygenated hydrocarbons.

4398. (original): The mixture of claim 4382, wherein the mixture comprises hydrocarbons having greater than about 2 carbon atoms, and wherein the weight ratio of hydrocarbons having greater than about 2 carbon atoms to methane is greater than about 0.3.

4399. (currently amended): A condensable mixture produced from ~~a portion of a coal~~ formation, comprising:

olefins, wherein about 0.1 % by weight to about 15 % by weight of the condensable mixture comprises olefins;

oxygenated hydrocarbons, wherein less than about 15 % by weight of the condensable mixture comprises oxygenated hydrocarbons; and

asphaltenes, wherein less than about 0.1 % by weight of the condensable mixture comprises asphaltenes.

4400. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises hydrocarbons having a carbon number of greater than approximately 25, and~~ wherein less than about 15 weight % of the hydrocarbons in the mixture have a carbon number greater than approximately 25.

4401. (original): The mixture of claim 4399, wherein about 0.1 % by weight to about 5 % by weight of the condensable mixture comprises olefins.

4402. (original): The mixture of claim 4399, wherein the condensable mixture further comprises non-condensable hydrocarbons, wherein the non-condensable hydrocarbons comprise ethene and ethane, and wherein a molar ratio of ethene to ethane in the non-condensable hydrocarbons ranges from about 0.001 to about 0.15.

4403. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises nitrogen-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is nitrogen.

4404. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises oxygen-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is oxygen.

4405. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises sulfur-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable mixture is sulfur.

4406. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises oxygen-containing compounds, wherein about 5 % by weight to about 30 % by weight of the condensable mixture comprise oxygen-containing compounds, and~~ wherein the ~~oxygen-containing compounds~~ oxygenated hydrocarbons comprise phenols.

4407. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises aromatic compounds, and~~ wherein greater than about 20 % by weight of the condensable mixture ~~are~~ comprise aromatic compounds.

4408. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises multi-ring aromatics, and~~ wherein less than about 5 % by weight of the condensable hydrocarbons comprises multi-ring aromatics with more than two rings.

4409. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture further comprises cycloalkanes, and~~ wherein about 5 % by weight to about 30 % by weight of the condensable mixture ~~are~~ comprise cycloalkanes.

4410. (currently amended): The mixture of claim 4399, ~~wherein the condensable mixture comprises~~ further comprising a non-condensable component ~~hydrocarbons, and~~ wherein the non-condensable ~~hydrocarbons~~ comprise component comprises hydrogen (H_2), and wherein the hydrogen is greater than about 10 % by volume at 25 °C and one atmosphere absolute pressure of the non-condensable ~~hydrocarbons~~ component and wherein the hydrogen is less than about 80 % by volume at 25 °C and one atmosphere absolute pressure of the non-condensable ~~hydrocarbons~~ component.

4411. (original): The mixture of claim 4399, further comprising ammonia, and wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4412. (original): The mixture of claim 4399, further comprising ammonia, and wherein the ammonia is used to produce fertilizer.

4413. (original): The mixture of claim 4399, wherein about 0.1 % by weight to about 2 % by weight of the condensable mixture comprises olefins.

4414. (currently amended): A condensable mixture produced from ~~a portion of a coal~~ formation, comprising:

olefins, wherein about 0.1 % by weight to about 2 % by weight of the condensable mixture comprises olefins;

multi-ring aromatics, wherein less than about 2 % by weight of the condensable mixture comprises multi-ring aromatics with more than two rings; and

oxygenated hydrocarbons, wherein greater than about 25 % by weight of the condensable mixture comprises oxygenated hydrocarbons.

4415. (currently amended): The mixture of claim 4414, ~~further comprising hydrocarbons having a carbon number of greater than approximately 25~~, wherein less than about 5 weight % of ~~the hydrocarbons in the mixture have a carbon number greater than approximately 25~~.

4416. (currently amended): The mixture of claim 4414, ~~wherein the condensable mixture further comprises nitrogen-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable ~~hydrocarbons mixture~~ is nitrogen.

4417. (currently amended): The mixture of claim 4414, ~~wherein the condensable mixture further comprises oxygen-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable ~~hydrocarbons mixture~~ is oxygen.

4418. (currently amended): The mixture of claim 4414, ~~wherein the condensable mixture further comprises sulfur-containing compounds, and~~ wherein less than about 1 % by weight, when calculated on an atomic basis, of the condensable ~~hydrocarbons mixture~~ is sulfur.

4419. (currently amended): The mixture of claim 4414, ~~wherein the condensable mixture further comprises oxygen-containing compounds, wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons comprise oxygen-containing compounds, and wherein the oxygen-containing compounds~~ oxygenated hydrocarbons ~~comprise phenols~~.

4420. (currently amended): The mixture of claim 4414, ~~wherein the condensable mixture further comprises aromatic compounds, and~~ wherein greater than about 20 % by weight of the condensable mixture ~~are~~ comprises aromatic compounds.

4421. (currently amended): The mixture of claim 4414, ~~wherein the condensable mixture further comprises condensable hydrocarbons, and~~ wherein less than about 0.3 % by weight of the condensable hydrocarbons ~~are~~ comprise asphaltenes.

4422. (currently amended): The mixture of claim 4414, ~~wherein the condensable mixture further comprises cycloalkanes, and~~ wherein about 5 % by weight to about 30 % by weight of the condensable hydrocarbons are cycloalkanes.

4423. (original): The mixture of claim 4414, further comprising ammonia, wherein greater than about 0.05 % by weight of the produced mixture is ammonia.

4424. (original): The mixture of claim 4414, further comprising ammonia, wherein the ammonia is used to produce fertilizer.

4425-5149. (cancelled)